DOCUMENT RESUME

ED 112 670 FL 007 135

AUTHOR Perfetti, Charles A.; Goldman, Susan R.

TITLE Discourse Functions of Thematization and Topicalization.

INSTITUTION Pittsburgh Univ., Pa. Learning Research and Development Center.

SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 75
NOTE 25p.

EDRS PRICE MF-$0.76 HC-$1.58 Plus Postage
DESCRIPTORS *Cognitive Processes; Connected Discourse; *Discourse Analysis; Language Research; Memory; Narration; Nominals; *Psycholinguistics; *Reading Comprehension; *Recall (Psychological); Semantics; Sentences; Sentence Structure; Verbs

ABSTRACT

Thematization, the relative frequency of a discourse referent, and topicalization are conceptualized as related discourse functions. In a probe recall experiment, a word with a thematized referent was a better recall probe than a word with a nonthematized referent. Also, an agent noun was a better prompt than a recipient, and this semantic variable interacted with topicalization so that a semantic recipient was a better prompt when it was topic than when it was comment. In a second experiment, subjects' choice between semantically equivalent active and passive sentences was influenced by thematization. Thematized nouns were chosen as topics more often than nonthematized nouns, and nouns used as paragraph titles were chosen as topics slightly more than non-title nouns. It is suggested that twin discourse functions are served by thematization and topicalization, the former providing stable referential focus and the latter providing monentary referential focus. (Author)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

LEARNING RESEARCH AND DEVELOPMENT CENTER

1975/21

DISCOURSE FUNCTIONS OF THEMATIZATION AND TOPICALIZATION

CHARLES A. PERFETTI AND SUSAN R. GOLDMAN

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED112670

FL007135

University of Pittsburgh

DISCOURSE FUNCTIONS OF THEMATIZATION AND TOPICALIZATION

Charles A. Perfetti and Susan R. Goldman

Learning Research and Development Center

University of Pittsburgh

To appear in Journal of Psycholinguistic Research

The research reported herein was supported by the Learning Research and Development Center, supported in part as a research and development center by funds from the National Institute of Education (NIE), United States Department of Health, Education, and Welfare. The opinions expressed do not necessarily reflect the position or policy of NIE, and no official endorsement should be inferred.

Abstract

Thematization, the relative frequency of a discourse referent, and topicalization are conceptualized as related discourse functions. In a probe recall experiment, a word with a thematized referent was a better recall probe than a word with a nonthematized referent. Also, an agent noun was a better prompt than a recipient, and this semantic variable interacted with topicalization such that a semantic recipient was a better prompt when it was topic than when it was comment. In a second experiment, subjects' choice between semantically equivalent active and passive sentences was influenced by thematization. Thematized nouns were chosen as topics more often than nonthematized nouns, and nouns used as paragraph titles were chosen as topics slightly more than non-title nouns. It is suggested that twin discourse functions are served by thematization and topicalization, the former providing stable referential focus and the latter providing momentary referential focus.

DISCOURSE FUNCTIONS OF THEMATIZATION AND TOPICALIZATION

Charles A. Perfetti and Susan R. Goldman

Learning Research and Development Center
University of Pittsburgh

The purpose of the present paper is to suggest a way of conceptualizing certain discourse variables and their relationship to sentence variables. In particular, thematization and topicalization will be conceptualized as related discourse functions that influence sentence processes.

Thematization, in general terms, refers to the construction of a referential "theme" in the course of processing connected discourse. A writer or speaker has a number of linguistic and nonlinguistic devices at his or her disposal for thematization, and the reader or listener constructs a parallel thematized representation during normal comprehension. From the comprehender's point of view, the primary function of thematization is to provide a referential core around which propositional information concerning the referent is organized. Thematization thus should affect memory for propositional information, and, in fact, it does determine the effectiveness of a noun as a probe for sentence memory (Perfetti & Goldman, 1974). Of course, this account is very general, and a more precise understanding of the component processes of thematization is needed at some point.

For the moment, we have taken thematization to be measurable by the relative frequency of propositions that contain a noun phrase identified by the referent (Perfetti & Goldman, 1974). For example, a discourse that can be analyzed into, say, 100 component propositions is heavily thematized

if a particular referent identifies noun phrases that occur in 70 of these propositions. A discourse that is relatively unthematized would have a more rectangular distribution of referents in its component propositions. Thus, thematization conceptualized in this way can be seen to have two properties. First, a given discourse can be identified as thematizing X rather than Y by observing the relative frequency of propositions containing X compared with Y. Secondly, a discourse can be characterized as highly thematized or weakly thematized by the distribution of referents in its propositional structure. It is this first characteristic of thematization that is under consideration here.

The second discourse variable of interest is topicalization, by which we mean the linguistic device of ordering referential elements in a sentence. It has long been useful grammatically to distinguish between the topic and comment of a sentence (Hockett, 1958). The distinction has been made linguistically on various grounds, and Halliday's (1970) analysis of complex subject functions is especially insightful psychologically. However, Halliday's concept of "theme" may not be the most appropriate for a referential view of subject functions, since it includes any linguistic contentive placed at the beginning of a sentence, including adverbs such as suddenly as in Suddenly, the rope gave way. Since thematizing such nonreferential ideas as suddenly seems a remote possibility in normal discourse, it is the concept of grammatical subject (Halliday's "modal subject") that we identify with the notion of topic. While there are complexities involved in various distinctions concerned with other related sentence variables, including Halliday's given and new distinction and Chafe's (1972) foregrounding concept, these complexities arise because information prior to the sentence is considered. For present purposes, the simplifying concept of topic and comment, as described by Hockett (1958; see also Lyons, 1969), is preferable because the related distinctions can then be considered as

discourse variables that predict topicalization, that is, which element will occur first in the sentence. Thematization is hypothesized to be a significant variable in this respect.

The studies to be reported suggest preliminary evidence for parallel functions of thematization and topicalization in the recall of sentence information and for the effect of thematization on topicalization. Thematization was defined, in the manner described above, as the relative frequency of propositions containing an explicit or implicit realization of a given referent. Topicalization was operationally defined by which of two nouns occurred as the initial noun (grammatical subject) of the final sentence of a passage. With respect to topicalization, the exclusive means for manipulating this variable to control for semantic content of the sentence was passivization.

On the one hand, passivization is just one device for topic control, and generalizations concerning topicalization will eventually require examination of other devices (e.g., cleft sentences). On the other hand, we already know a good deal about the psychological properties of passivization (e.g., Johnson-Laird, 1968; Olson & Filby, 1972; Tannenbaum & Williams, 1968; Wright, 1969). The converging conclusion from this research is that for both the encoder and the decoder, the role of the passive is to focus attention on the recipient of some action. Olson and Filby (1972) showed that the prior coding of a perceptual event in terms of the receiver of an action facilitated the processing of a passive sentence in which the receiver was the first noun (topicalized). In a sense, we are investigating the linguistic parallel to Olson and Filby's (1972) perceptual coding. Here, thematization is a mechanism for influencing the coding of a narrative event prior to a sentence which concludes the narrative.

The first experiment tested the hypotheses that prompted recall of that final sentence would depend upon which noun prompt is thematized and that the effect on recall of topicalization (active vs. passive) of the final

sentence would depend upon thematization. Thus, thematization was expected to be a potent variable regardless of the form of the final sentence, while topicalization was expected to be effective for the recall of meaning only in interaction with thematization. Because thematization is hypothesized to increase the importance of an element as a memory probe, a thematized semantic agent should be a good prompt regardless of whether it is topicalized. However, since the function of passivization is to mark the recipient as topic, topicalization of a thematized recipient should enhance its effectiveness as a recall prompt. The aim of the second and third studies was to test the hypothesis that preference for passive sentences depends upon which of two nouns is thematized in the previous part of the passage.

Experiment 1

Experiment 1 investigated the prompted recall of a sentence that concluded a brief narrative passage. The noun prompt for sentence recall assumed one of two possible values in each case. The noun prompt was thematized or (relatively) nonthematized, topic or comment, and agent or recipient. The topic-comment variable was realized by whether the sentence was active or passive.

Method

Design. The original experimental design involved a 2^4 factorial design with repeated measures on two factors. Two between-subject factors were thematization and retention interval, while semantic role (i.e., whether a noun prompt was an agent or a recipient) and topicalization (i.e., whether the noun was topic or comment) were varied within subjects. For one group of 64 subjects, the retention interval was measured to just after reading all passages (an average retention interval of around 15 minutes) and, for a second group of 64 subjects, to approximately 48 hours after reading. Within each retention interval, 32 subjects received

prompts that were exclusively thematised and 32 subjects were prompted exclusively with nonthematized prompts. Thus, there were 32 subjects in each of the four conditions (128 total).

The thematization variable was defined as which of two nouns from the test sentence, e.g., The admiral captured the bandit, had its referent more frequently involved in the preceding part of the narrative passages. For the 16 passages used in the experiment, the thematised noun occurred in an average of 11.3 propositions while the nonthematised nouns occurred in an average of 4.9 propositions. This count includes occurrence of the noun itself, proper names, synonyms, pronouns, and grammatically deleted nouns which have the same referent. The number of times the two nouns explicitly occurred in the preceding passage was actually about equal on the average (about two times for each noun).

The within-subject variables of topicalisation and semantic role were varied by choosing active sentences to conclude half the paragraphs and passive sentences for the other half. Thus for each subject, eight test sentences appeared as actives and eight as passives. Within each of the eight types, every subject was prompted four times with the first noun and four times with the second noun. In this way, each subject was prompted by four agent-topics, four recipient-topics, four agent-comments, and four recipient-comments.

The structure of the experiment can be seen in Table 1, which presents an example of an experimental passage. Note that the sentence, The admiral captured the bandit concluded two different passages, and that the two passages described the very same event, and indeed began with an identical opening sentence. They varied only in that one narrative contained more propositions about the admiral (thematizing admiral) while the other contained more about the bandit (thematizing bandit).

Table 1

Example of Experimental Passage

Within the State Department the embassy in the Republic of Costa Rica has long been considered the most uneventful post in the foreign service. Rarely has anything occurred there to disturb the diplomats' routine.	Within the State Department the embassy in the Republic of Costa Rica has long been considered the most uneventful post in the foreign service. Rarely has anything occurred there to disturb the diplomats' routine.
Until last night, Admiral Thomas J. Foster, the U. S. military attache, would have agreed with this description of diplomacy in Costa Rica. Admiral Foster, a veteran of two wars and a former commander of the Pacific Fleet was assigned to the embassy there over two years ago. Working late in his office last night, Foster heard a strange noise down the hall. Upon investigating, he discovered the famous bandit, El Gato, trying to open the embassy safe. The admiral captured the bandit. (or: The bandit was captured by the admiral.)	Last night, however, such a disturbance took place. A bandit known as El Gato broke into the American Embassy. For the last five years El Gato has been robbing banks and the homes of the wealthy aristocracy, acquiring a Robin Hood image among the populace. He has escaped from jail numerous times. Once inside the embassy last night, El Gato was surprised by the U. S. military attache, Admiral Thomas J. Foster, who was working late in his office. The admiral captured the bandit. (or: The bandit was captured by the admiral.)

The passages were taken from those used in Perfetti and Goldman (1974). They were modified only by making changes, where necessary, in order that the sentence just before the target sentence contained one

reference to each of the two nouns of the target sentence. This was stylistically necessary so that either an active or a passive could conclude the passage. Overall, the passages averaged about 11.5 double-spaced lines of type (range 9-14). Eight passage orders were used to control list effects.

Test sentences. The sentences to be recalled were the final sentences of the narrative passage. All test sentences contained transitive verbs and two nouns that were controlled for printed frequency and were high in imagery and concreteness. Each sentence permitted passivization. The test was a prompted recall task for which each subject was provided an individual test booklet, each page containing a single prompt word from the test sentence. The prompt word was either the agent or the recipient noun from the sentence and the ordering of the noun prompts corresponded to the order of the 16 passages read by the subject.

Subjects and procedure. The 128 subjects were largely undergraduates of the University of Pittsburgh, with a few being college-age employees of the Learning Research and Development Center.

Subjects read the passage in small groups at their own pace. Subjects were told to "read each passage for meaning and understanding" and informed of a later test concerning the passages but not the nature of the test. To assure an appropriate level of comprehension, subjects made a judgment of which magazine or newspaper would be a likely source for such a passage. Immediately after reading the passages, subjects filled out a questionnaire concerning what magazines they read. In the immediate test condition, each subject was then given the test booklet upon indicating that he had completed the questionnaire. In the 48-hour condition, subjects left after the questionnaire and returned two days later for the recall test. Upon receiving the test booklet, subjects read the instructions on the cover which asked him to recall the underlined sentence which contained the word

on the page of the test booklet. He was told to try to produce as much of the meaning as possible if he could not recall the exact words. Each subject proceeded at his own pace within an overall time limit of 8 minutes and was permitted to go through the test booklet once only in the prescribed order.

Results and Discussion

The results of the experiment are based upon analyses of recall categories ordered according to the extent to which a response contained the information of the target sentence. Most of the results reported here are based on recalls which preserved the meaning of the target sentence either as a verbatim reproduction of the sentence or as a meaning preserving paraphrase. A response was classified as verbatim if it contained the exact words in the same surface order of the target sentence. Deleted articles and changes in tense or number which did not distort the meaning of the original sentence were ignored. A response was classified as a meaning-preserving paraphrase if the surface order did not agree with the target and if synonyms were substituted for the exact words. For example:

Target: The bandit was captured by the admiral.

Verbatim: Bandit was captured by admiral.

Meaning Preserving: Admiral captured bandit. (Recoding)

Meaning Preserving: Outlaw was captured by the admiral. (Recipient noun substitute)

Meaning Preserving: Bandit captured by Foster. (Agent noun substitute)

Interjudge reliability for the use of the meaning-preserving category was better than 98%.

For the 48-hour condition, retention was very low. Only about 12% of recall opportunities produced a response that preserved the meaning of the sentence, 25% of which were verbatim. There were no significant effects on recall of any of the experimental variables. Accordingly, detailed results here are reported only for the immediate retention interval in which the average elapsed time between reading a given passage and recalling the final sentence from that passage was 15 minutes.

Immediate recall. The average meaning-preserving recall in the immediate condition was 41%, about one-third of which were verbatim. This is lower than the 60% recall observed with the same materials in an earlier experiment which used lists of 12 passages rather than 16 (Perfetti & Goldman, 1974).

Table 2 shows the pattern of meaning-preserving recalls for the immediate condition. The data are presented with reference to the example of the admiral and the bandit, but it should be emphasized that the data are the proportions of meaning-preserving recalls averaged over all 16 sentences.

The most important results shown in Table 2 are the following, each of which was tested by an analysis of variance for repeated measures:

1. The agent-deep subject of a sentence was a better prompt than the recipient-deep object, $F(1,62) = 8.24$, $p < .01$. In terms of the example, admiral was overall a better prompt than bandit. In addition, although this is not shown in Table 2, there was a significant all-or-none difference between agent and recipient. Recipient prompts produced more response attempts but fewer meaning-preserving responses.

2. A noun was a better prompt when it had been thematized than when it had not been thematized, $F(1,62) = 4.34$, $p < .05$). When the passage had more propositions about the admiral, the word admiral was a better prompt than bandit, regardless of the form of the sentence; similarly, bandit was a better prompt when it had been thematized than when it had not.

Table 2

Observed Probabilities of Meaning-Preserving Recall

	Theme			
	Agent Theme: Admiral		Recipient Theme: Bandit	Means
	(Topic: Admiral)			
Target	The admiral captured the bandit			(.39)
Agent Prompt	.50	Admiral	.38	(.44)
Recipient Prompt	.27	Bandit	.39	(.33)
	(Topic: Bandit)			
Target	The bandit was captured by the admiral			(.44)
Agent Prompt	.50	Admiral	.42	(.46)
Recipient Prompt	.36	Bandit	.48	(.42)

Means			
Admiral Theme	.41	Bandit Theme	.42
Thematized Prompt	.47	Nonthematized Prompt	.38 ($p < .05$)
Agent Prompt (Admiral)	.45	Recipient Prompt (Bandit)	.38 ($p < .01$)
Topic Prompt	.43	Comment Prompt	.40

3. Whether the prompt was the first noun in the sentence (topic) or the second noun in the sentence (comment) did not make a significant difference overall, $F(1, 62) = 1.77$, although there was a slightly higher average for the topic position (.430 vs. .395).

4. There was an interaction between the surface structure variable and the semantic variable that approached statistical significance. While it

mattered not at all whether the agent prompt was in the first or second position, the recipient was a much better prompt when it was first in the sentence than when it was second. For the example, bandit was a better prompt in a passive sentence where it was the topic than in an active sentence where it was the comment. While this interaction does not reach conventional levels of statistical significance, $F(1,62) = 3.77$, $p = .056$, it is quite significant conceptually and consistent with results from different experimental tasks which show that placing the deep object in the first position provides it with a special focus (Olson & Filby, 1972).

To summarize what happened in an immediate recall test when subjects were given a noun prompt and required to recall a sentence from a passage: Recall was about 30% better when the prompt had been thematized in the passage preceding the sentence. When the agent was thematized, it was more than 55% better than the recipient as a prompt. When the recipient was the theme, it was only a slightly better prompt than the agent. When the recipient was the topic--i.e., when the sentence was passive--its prompting power was enhanced by about 30%. Topicalization did not, however, effect the prompting power of the agent.

One additional point concerning the surface structure variable was significant. When sentences which were reproduced verbatim are separated from accurate paraphrases, there is a large effect of surface structure, $F(1,62) = 20.02$, $p < .001$. When the first noun was the prompt, a verbatim recall was nearly twice as probable as when the second noun was the prompt (.181 vs. .095). This reflects a tendency to produce at recall a sentence with the prompt word as the subject and replicates a similar finding by Perfetti & Tucker (1973). Similarly, active sentences were also twice as likely as passives to be recalled verbatim.

Recoding. A result that bears on the relation between thematization and topicalization is the recoding in recall of the target sentence. There

was for our subjects the usual tendency to produce in the active voice a sentence that had been read in the passive voice. For meaning-preserving responses, such recoding occurred about 85% of the time in the immediate condition (about 15 minutes) and about 92% of the time after 48 hours. A summary of the recoding data is seen in Table 3.

Table 3

Passive-Active Recodings

Prompt	Theme	Non-Theme	
Agent-Comment (Admiral)	.96	.85	(.91)
Recipient-Topic (Bandit)	.78	.72	(.76)
Ave.	(.90)	(.80)	(.85)

Recoding to an active sentence was more probable when the prompt was the agent-comment than when it was the recipient-topic. The respective percentages are 91 and 76. This difference again reflects the encoding strategy of reconstructing the retrieved information by placing the prompt in the subject position and adding on the predicate. Thus, a recoding resulted more often when the prompt had been the second noun of the original sentence than when it had been the first noun.

A second and perhaps more interesting effect on recoding was produced by thematizing the prompt. A thematized prompt, whether it had been the first or second noun in the sentence, produced more recodings from passive to active than did a nonthematized prompt. Recoding occurred 90% of the time to a thematized prompt and 80% of the time to a nonthematized one immediately after reading, and this difference persisted after 48

hours. Our tentative explanation for this result is related to our general conceptualization of thematization and memory. In brief, it is assumed that a thematized referent is the core of a memory representation constructed during the reading or hearing of a discourse. Other elements of this representation include all the predications made concerning the referent and their interrelationships. The information of the target sentence, or any sentence containing the thematized referent, is assimilated with the existing representation. At recall, this theme-centered representation is reflected in the tendency to put the thematized noun in the subject position of an active sentence.

Summary

The interactive relationship between one aspect of sentence structure and one aspect of discourse structure has been demonstrated in a recall task. The effect of theme is to provide an organization for memory. A noun prompt has better access to this memory when it has been thematized. Table 4 shows a summary of the effect of the various combinations of sentence and discourse features investigated in this experiment. The

Table 4

Summary of Prompt Effectiveness by Noun Feature

Noun Feature	Probability of Meaning-Preserving Recall		Noun Feature
Agent	.42	.27	Recipient
Agent + Topic	.38	.36	Recipient + Topic
Agent + Theme	.50	.39	Recipient + Theme
Agent + Topic + Theme	.50	.48	Recipient + Topic + Theme

effects of thematization and topicalization appear to be additive for a noun which is a semantic recipient, but not for semantic agent, which is unaffected by whether it is an active or passive sentence. This is quite consistent with what we know about the discourse function of the passive voice, for example, with the fact that comprehending a passive sentence is made easier when a perceptual event which the sentence describes has been coded in terms of the semantic recipient (Olson & Filby, 1972).

The general interpretation is that passivization and thematization are both devices of discourse focus. Our results show that special focus is added to a recipient noun by making it the topic noun of a sentence and that even more focus is added by thematizing it in the previous discourse. The additive results of both of these features in combination, as can be seen from Table 4, is an increase of more than 75% in the retrieval power of a recipient noun.

Experiment 2

The second experiment was a direct attempt to determine whether topicalization is affected by thematization. There are empirical grounds for expecting that the choice of passive or active voice is influenced by conceptual variables. For example, Johnson-Laird (1968) found that people preferred to use the passive when the situation to be described drew attention to the logical object. The task in Johnson-Laird's research was simply to describe the relation between two colored areas of different size on a piece of paper. The larger area tended to be topicalized. A similar result was found by Tannebaum and Williams (1968) in a study in which subjects had to produce active or passive sentences to describe a situation. When the situation required focus on the logical object, the time to produce a passive was not greater than the time to produce an active.

The specific effect of thematization is due to its hypothesized function of providing a focus for comprehension. The hypothesis is that thematized elements will be chosen as sentence topics more often than nonthematized elements. There are other probable determinants of topicalization, some, like thematization, having their effect through prior coding processes in the passage and others far more localized. An example of a localized effect would be the momentary foregrounding of an element through its occurrence in the previous sentence or clause. An element just mentioned may have some priority as a topic. An example of a more global variable would be the title of a passage. Like thematization, the title of a passage potentially provides a focus for constructing an understanding of the passage. In Experiment 2, we attempted to test the contribution of the more global discourse variable of thematization and title while attempting to control the more localized variable of foregrounding. Experiment 2 tested the effect of thematization on topicalization when the passages are untitled, and in a replication, the same effect is tested when passages are read with titles.

Method

The materials were the 16 passages used in Experiment 1, minus the final target sentences. Since the subjects' task was to choose between an active and a passive sentence to conclude the passage, it was necessary to control the occurrence of the two nouns in the immediately preceding sentence so that the relation between thematization and topicalization could be tested without excessive confounding of thematization and momentary foregrounding. Of course, a complete unconfounding is very difficult since, if the hypothesis is correct, the form of the penultimate sentence is affected by thematization also. Thus, which of the two critical nouns occurred first in the penultimate sentence could not be held constant in the experiment, but both references and both nouns did occur.

The two variables were thematization and title. The dependent measure was the forced-choice response of subjects indicating their preference for an active or equivalent passive to conclude the passage. For example, in the admiral-bandit case, subjects chose between The admiral captured the bandit and The bandit was captured by the admiral. In the untitled condition, 16 subjects read the passage that thematized admiral and 16 read the passage that thematized bandit. The thematization variable was a within-subjects variable, with each of the 32 subjects reading eight passages that thematized the agent and eight passages that thematized the recipient.

The title manipulation was essentially a replication of the design just described with 64 new subjects. Thus, 32 subjects read a passage titled "The Bandit," while 32 subjects read a passage titled "The Admiral." Within each group of 32, 16 actually read the passage thematizing admiral while 16 read the passage thematizing bandit. For any subject, half of the titles were congruent with thematization and half were not.

For both the untitled passage experiment and the title replication, four balanced orders of presentation were used and the 96 subjects were tested in large groups. Subjects were instructed to read the passage and to circle the sentence (active or passive) that best concluded the passage.

Results and Discussion

Considering first the untitled experiment, which provides the most direct test of the hypothesized effect of thematization on topicalization, there was a significantly greater preference for passives when the recipient had been thematized than when the agent had been thematized. When the agent of the final sentence had been thematized by the passage, passives were chosen 35% of the time as the preferred form of the final sentence. This figure increased to 50% when the passage thematized the recipient, $F(1,62) = 8.21$, $p < .01$.

That active choice is not exceeded by passive choice even under recipient thematization reflects the preferred status given to the active voice a wide range of conditions. One might argue that other factors are more important in passivization and that passive choice should exceed active choice, for instance, when momentary foregrounding of the recipient occurs in the preceding clause. To test this possibility, we noted for each passage whether the last noun in the clause preceding the final sentence referred to the agent or the recipient of the final sentence.

Overall there was no significant effect of the last noun variable. When there was an agent theme, there was a slight effect of the last noun such that when the last noun was an agent, the passive was chosen 31%, compared with 39% when the last noun had been a recipient. With a recipient theme, there was a slight reversal with 53% passive when the last noun was an agent and 48% when the last noun was a recipient. While statistical analysis of possible interactions was not appropriate, it appears that topicalization was not directly related to momentary clause foregrounding. The choice of a passive was overall approximately 43% whether the agent or the recipient was the last noun of the preceding clause.

Title Replication

The replication experiment which added title as an orthogonal variable to thematization confirmed the results of the untitled experiment for the effect of thematization on topicalization. Recipient themes produced 46.5% passive preference compared with 31.5% passive preference for agent themes, $F(1,63) = 14.32$, $p < .01$. This 15% difference parallels the result of the untitled experiment, but the overall preference for the passive was lower in the titled condition than in the untitled. It should be noted that replication in this case refers to observing the same result with a new group of subjects, since except for the titles, the materials were identical for the two experiments.

The effect of title was also significant in the replication as can be seen in Table 5 which summarizes the results of Experiment 2. When the title referred to the agent, e.g., "The Admiral," passive choice was 36.5%; when the title referred to the recipient, e.g., "The Bandit," passive choice was 41.5%, $F(1, 63) = 3.99$, $p = .05$. There was no interaction between title and theme ($F < 1$).

Table 5

Observed Probability of Selecting Passive Sentence

	No Title	Agent Title	Recipient Title
Agent Theme	.35	.30	.21
Recipient Theme	.50	.43	.50

The last noun analysis was also done on these data. As in the untitled experiment, there was no general effect of whether the last noun of the preceding clause referred to the agent or to the recipient of the final sentence, although choice of a passive when the last noun was an agent was slightly greater (43.4%) then when it was a recipient (39.8%). However, the importance of the last noun variable can be seen for specific combinations of theme and title. Since an analysis of variance of these data is not appropriate, the possible operation of momentary foregrounding can be merely suggested by the following comparison. The highest preference (53.1%) for a passive occurred when the recipient was the theme and the title, but the last noun of the preceding clause referred to the agent. The

lowest preference (27.5%) for a passive occurred when the agent was the theme and the title, but the last noun of the preceding clause referred to the recipient. This comparison is made only with caution, because the momentary foregrounding variable is not separable from other characteristics of the penultimate sentence which were quite variable from one passage to another. However, it does suggest a sort of complex balancing in topicalization. An element which has discourse reasons for being topicalized but has been momentarily "backgrounded" has a strong requirement to be reasserted as the focus of the discourse.

Overall Discussion

The result of Experiment 2 can be taken as support for the idea that sentence topicalization is affected by variables that are remote from the sentence as well as more localized variables. Both the title of the passage and its actual theme determined the preference for passives, with thematization producing a larger effect. By contrast, a discourse variable nearer to the observed sentence, momentary foregrounding, appeared to have no simple effect, but only in interaction with discourse variables. These generalizations concerning topicalization are to be made with some caution, however. For one thing, actual production was not observed in these experiments; and for another, the momentary foregrounding variable was not isolable from other sentence variables. Also, we note again the need to investigate topic control devices other than the passive. Within the context developed by these experiments, we can suggest that topicalization is a process that is highly dependent upon thematic discourse variables.

The first experiment is also consistent with this picture. The prompt effectiveness of a noun was related to its thematization and topicalization, and there appeared, in fact, to be an additive effect of these variables for a semantic recipient, but not for an agent. Thematization and

topicalization serve twin discourse functions. The first provides a stable referential focus for new information while the second provides momentary focus for information currently presented. Thus, a semantic recipient is more focused when it has been thematized. It is still more focused when it has been topicalized. And in light of Experiment 2, it selection as sentence topic is increased by its thematization. Thus, momentary focus is at least partly a function of stabilized focus.

References

Chafe, W. L. Discourse structure and human knowledge. In J. B. Carroll and R. Freedle (Eds.), Language comprehension and the acquisition of knowledge. Washington, D. C.: V. H. Winston & Sons, 1972.

Halliday, M. A. K. Clause types and structural function. In J. Lyons (Ed.), New horizons in linguistics. Baltimore, Maryland: Penguin Books, 1970.

Hockett, C. F. A course in modern linguistics. New York: MacMillan, 1958.

Johnson-Laird, R. N. The choice of the passive voice in a communicative task. British Journal of Psychology, 1968, 59, 7-15.

Lyons, J. Introduction to theoretical linguistics. Cambridge: The University Press, 1969.

Olson, D., & Filby, N. On comprehension of active and passive sentences. Cognitive Psychology, 1972, 3, 361-381.

Perfetti, C. A., & Goldman, S. R. Thematization and sentence retrieval. Journal of Verbal Learning and Verbal Behavior, 1974, 13, 70-79.

Perfetti, C. A., & Tucker, S. Prompted recall of sentences with reciprocal and converse propositions. Paper presented at the American Psychological Association, Montreal, August, 1973.

Tannenbaum, P. H., & Williams, F. Generation of active and passive sentences as a function of subject or object focus. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 246-250.

Wright, P. Two studies of the depth hypothesis. British Journal of Psychology, 1969, 60, 63-69.